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Botulinum Toxin for Treating Primary Focal Hyperhidrosis in Adult Patients: Clinical Effectiveness

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Research Question

What is the clinical effectiveness of botulinum toxin for treating primary focal hyperhidrosis in adult patients?

Key Findings

One health technology assessment, one randomized controlled trial, and one non-randomized study were identified regarding the clinical effectiveness of botulinum toxin for treating primary focal hyperhidrosis in adult patients.

Methods

A limited literature search was conducted by an information specialist on key resources including Medline, Embase, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were botulinum and hyperhidrosis. No search filters were applied to limit retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2015 and June 16, 2020. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Populations	Adult patients (18 years or older) with primary focal hyperhidrosis (e.g., axillary, planar, plantar) or compensatory hyperhidrosis post-sympathectomy Exclude: night sweats, menopausal hot flashes
Intervention	Botulinum toxin (any formulation)
Comparators	Anticholinergics (e.g., glycopyrrolate), antidepressants, placebo
Outcomes	Clinical effectiveness (e.g., impact on level of sweat/perspiration, quality of life including the effect on patient's ability to work) and safety (e.g., adverse drug reaction)
Study Designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies

Results

One health technology assessment,[1] one randomized controlled trial,[2] and one non-randomized study[3] were identified regarding the clinical effectiveness of botulinum toxin for treating primary focal hyperhidrosis in adult patients. No systematic reviews were identified. Furthermore, no studies focusing on the working adult population were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in the appendix.

Overall Summary of Findings

One health technology assessment,[1] one randomized controlled trial,[2] and one non-randomized study[3] were identified regarding the clinical effectiveness of botulinum toxin for treating primary focal hyperhidrosis in adult patients. The health technology assessment by Wade et al.[1] aimed to determine the most effective treatments for refractory primary hyperhidrosis in secondary care. Overall, the authors concluded that there was moderate quality evidence that botulinum toxin injections, compared to placebo, had a statistically significant effect on axillary hyperhidrosis symptoms.[1] The randomized controlled trial by Lueangarun et al.[2] aimed to evaluate the efficacy and safety of a topical botulinum toxin A liposomal cream in patients with primary axillary hyperhidrosis. Compared to the liposomal vehicle cream alone, topical botulinum toxin A liposomal cream significantly improved sweat reduction and patient satisfaction outcomes.[2] Lastly, the non-randomized study by Baker et al.[3] compared the initial effectiveness of botulinum toxin A injections, 1% topical glycopyrrolate and 2% topical glycopyrrolate in patients with axillary hyperhidrosis. Overall, there was a significant improvement in treatment outcomes with botulinum toxin A compared to 1% glycopyrrolate spray, but no difference in treatment outcomes between botulinum toxin A and 2% glycopyrrolate spray.[3]

References Summarized

Health Technology Assessment

1. Wade R, Rice S, Llewellyn A, et al. Interventions for hyperhidrosis in secondary care: a systematic review and value-of-information analysis. *Health Technology Assessment (Winchester, England)*. 2017 12;21(80):1-280.
PubMed: PM29271741

Systematic Reviews and Meta-Analyses

No literature identified.

Randomized Controlled Trial

2. Lueangarun S, Sermsilp C, Tempark T. Topical Botulinum Toxin Type A Liposomal Cream for Primary Axillary Hyperhidrosis: A Double-Blind, Randomized, Split-Site, Vehicle-Controlled Study. *Dermatol Surg*. 2018 08;44(8):1094-1101.
PubMed: PM29659406

Non-Randomized Study

3. Baker DM. Topical glycopyrrolate reduces axillary hyperhidrosis. *J Eur Acad Dermatol Venereol*. 2016 Dec;30(12):2131-2136.
PubMed: PM27406319

Appendix — Further Information

Systematic Reviews and Meta-Analyses – Unclear Comparators

4. Wade R, Llewellyn A, Jones-Diette J, et al. Interventional management of hyperhidrosis in secondary care: a systematic review. *Br J Dermatol*. 2018 09;179(3):599-608.
   PubMed: PM29573391

5. Nicholas R, Quddus A, Baker DM. Treatment of Primary Craniofacial Hyperhidrosis: A Systematic Review. *Am J Clin Dermatol*. 2015 Oct;16(5):361-370.
   PubMed: PM26055729

Randomized Controlled Trial – Unclear Population

6. Cabreus P, Swartling C, Rystedt A. Postmenopausal craniofacial hyperhidrosis treated with botulinum toxin type B. *J Dermatol*. 2019 Oct;46(10):874-878.
   PubMed: PM31373068

Non-Randomized Studies

Mixed Population

7. Wein T, Jog M, Bhogal M, et al. Long-term Safety and Dosing of OnabotulinumtoxinA: A Prospective, Observational Study. *Can J Neurol Sci*. 2019 11;46(6):742-752.
   PubMed: PM31256770

Alternative Population

8. Bernhard MK, Krause M, Syrbe S. Sweaty feet in adolescents-Early use of botulinum type A toxin in juvenile plantar hyperhidrosis. *Pediatr Dermatol*. 2018 Nov;35(6):784-786.
   PubMed: PM30178509

9. Mirkovic SE, Rystedt A, Balling M, Swartling C. Hyperhidrosis Substantially Reduces Quality of Life in Children: A Retrospective Study Describing Symptoms, Consequences and Treatment with Botulinum Toxin. *Acta Derm Venereol*. 2018 Jan 12;98(1):103-107.
   PubMed: PM28761964

10. Glaser DA, Pariser DM, Hebert AA, et al. A Prospective, Nonrandomized, Open-Label Study of the Efficacy and Safety of OnabotulinumtoxinA in Adolescents with Primary Axillary Hyperhidrosis. *Pediatr Dermatol*. 2015 Sep-Oct;32(5):609-617.
    PubMed: PM26059781

Mixed Intervention

11. Karlsson-Groth A, Rystedt A, Swartling C. Treatment of compensatory hyperhidrosis after sympathectomy with botulinum toxin and anticholinergics. *Clin Auton Res*. 2015 Jun;25(3):161-167.
    PubMed: PM25773586

No Comparator

12. Kim HM, Lee MJ, Lee MH, Lee H. Pressure-and dose-controlled, needle-free, transcutaneous pneumatic injection of botulinum neurotoxin-A for the treatment of primary axillary and palmoplantar hyperhidrosis. *Skin Res Technol*. 2020 Jan. PubMed: PM31922304

13. Lynch OE, Aherne T, Gibbons J, et al. Five-year follow-up of patients treated with intra-dermal botulinum toxin for axillary hyperhidrosis. *Ir J Med Sci*. 2020 Jan 3. PubMed: PM31898163

14. Ryan A, Hill S, Sahota A. The use of Entonox as a dissociative anaesthesia during the injection of botulinum toxin for the treatment of palmar/plantar hyperhidrosis and the DLQI outcomes for these patients. *Br J Dermatol*. 2018 July;179 (Supplement 1):125. https://onlinelibrary.wiley.com/doi/epdf/10.1111/bjd.16546

Unclear Abstract

15. Rosen R, Stewart T. Results of a 10-year follow-up study of botulinum toxin A therapy for primary axillary hyperhidrosis in Australia. *Intern Med J*. 2018 Mar;48(3):343-347. PubMed: PM29512329

Review Articles

16. Nawrocki S, Cha J. Botulinum toxin: Pharmacology and injectable administration for the treatment of primary hyperhidrosis. *J Am Acad Dermatol*. 2020 Apr;82(4):969-979. PubMed: PM31811879

17. Guida S, Farnetani F, Nistico SP, et al. New trends in botulinum toxin use in dermatology. *Dermatol Pract Concept*. 2018 Oct;8(4):277-282. PubMed: PM30479855